24 Mar 1993

GE7NM-E

GENERATOR, FUNCTION

1. GENERAL. This procurement requires a function generator.

2. CLASSIFICATION. Type II, Class 3, Style E, and Color R in accordance with MIL-T-28800 for shipboard applications.

3. FUNCTIONAL CAPABILITIES. The equipment shall be capable of generating specified outputs within the minimum ranges, levels, and accuracies specified below. When multiple bands are provided, adjacent bands shall overlap. The accuracies specified refer to the typical full-range values stated below.

3.1 Frequency range. 0.0001 Hz to 20 MHz for all functions.

3.1.1 Frequency accuracy. ±3% of full range on all bands below 10 MHz and ±5% of full range on bands of 10 MHz and greater.

3.2 Output voltage. The variable output voltage across a 50 ohm load shall be as follows:

a. Sine, square, triangle, and pulse functions: 15V peak-to-peak minimum.

b. Positive square function: +7.5V minimum.

c. Negative square function: -7.5V minimum.

3.2.1 Frequency response. The output amplitude change for sine and sine-related waveforms shall not exceed ±3 dB throughout the specified frequency range.

3.3 Harmonics. Up to 2 MHz: 34 dB below fundamental. 2 to 20 MHz: 26 dB below fundamental.

3.3.1 Total harmonic distortion. 3%.

3.4 Square wave characteristics.

a. Rise time: 20 ns maximum.

b. Fall time: 20 ns maximum.

c. Symmetry: ±1% from 0.001 Hz to 200 kHz.

3.5 Pulse output characteristics. The equipment shall be provided with normal, delay, and double-pulse outputs.

a. Rise time: 20 ns maximum.

b. Fall time: 20 ns maximum.

c. Width: Continuously variable between 25 ns to 1 ms.

d. Delay: Continuously variable between 50 ns to 10 ms.

3.6 Inputs and outputs. The equipment shall be provided with the following inputs and outputs:

a. Voltage control input: An external 0 to 2V input shall cause a frequency change of at least 1,000:1.

b. Trigger and gate input: Signal generation shall be controlled with an external 1V to ±10V peak-to-peak input.

c. Generator control output: A 0 to 2V signal into 600 ohms proportional to the frequency of the generator.

d. Sync output: A synchronous TTL-level pulse capable of driving a 50 ohm load.

3.7 Controls.

3.7.1 Output attenuator. 60 dB output attenuator with 20 dB steps and a 20 dB vernier. Attenuator accuracy: ±0.3 dB/20 dB step below 2 MHz and ±2 dB/20 dB step from 2 MHz to 20 MHz.

3.7.2 DC offset. A dc voltage control shall provide ±7.5V dc offset for sine, square, triangle, and pulse outputs.

3.7.3 Symmetry control. Shall allow for continuously-adjustable symmetry of all waveforms from at least 1:19 to 19:1.

4. GENERAL REQUIREMENTS.

4.1 Power source. MIL-T-28800 nominal power source requirements are invoked. Maximum power consumption: 60W.

4.2 Weight. 20 kg (44 lb) maximum.

4.3 Lithium batteries. Per MIL-T-28800, lithium batteries are prohibited without prior authorization. A request for approval for the use of lithium batteries, including those encapsulated in integrated circuits, shall be submitted to the procuring activity at the time of submission of proposals. Approval shall apply only to the specific model proposed.